TEXAS J. SCI. 49(3) SUPPLEMENT:5-12 AUGUST, 1997

STATUS OF THE LONGLEAF PINE FORESTS OF THE WEST GULF COASTAL PLAIN

Kenneth W. Outcalt
USDA Forest Service, Southern Research Station
Athens, Georgia 30602

Abstract.—Data from the USDA Forest Service, forest inventory and analyses permanent field plot were used to track changes in longleaf pine (*Pinus palustris* Mill.) communities in Texas and Louisiana between 1985 and 1995. The decline of longleaf forest has continued in Louisiana. Texas had much less longleaf type in 1985, but unlike Louisiana there has been a small increase in the area occupied by longleaf over the last 10 years. This was due to an increase of longleaf forest on public and forest industry owned lands. The greatest losses in the region over the last decade were from private lands.

Longleaf pine communities once covered extensive areas of the West Gulf Coastal Plain. Texas and Louisiana were thought to have had the densest stands over the most extensive areas. Longleaf stands often failed to replace themselves following cutting and acreage declined rapidly. By 1935 much of the virgin longleaf was gone and losses continued through the following decades.

Intensive exploitation of longleaf forests, with little regard for regeneration, began in Virginia and North Carolina during colonial times. Mohr (1888) very early concluded that the prospect of maintaining the longleaf forest seemed hopeless. Longleaf stands often failed to replace themselves following cutting as the more competitive loblolly pine (*Pinus taeda* L.) and hardwoods captured the sites. Feral hogs contributed to the decline by feeding heavily on longleaf pine seed and seedlings (Schwarz 1907).

Longleaf pine forests originally covered extensive areas of the Gulf Coastal Plain from Texas to Alabama (Wahlenberg 1946). In the West Gulf Coastal Plain the longleaf type occurred in 19 parishes in Louisiana and 15 counties in adjacent southeast Texas (Little 1971). Mohr (1896) reported longleaf acreage of 1,625,000 north of the Red River and 2,668,000 south of the river in Louisiana and 2,890,000 in east Texas. The West Gulf Coastal Plain region was the last of the longleaf areas to be intensively logged (Landers et al. 1995). From an estimated pre-logged acreage of 7,183,000 it was reduced to 1,642,400 (Eldredge 1937; 1938; Cruikshank & Eldredge 1939) by 1935.

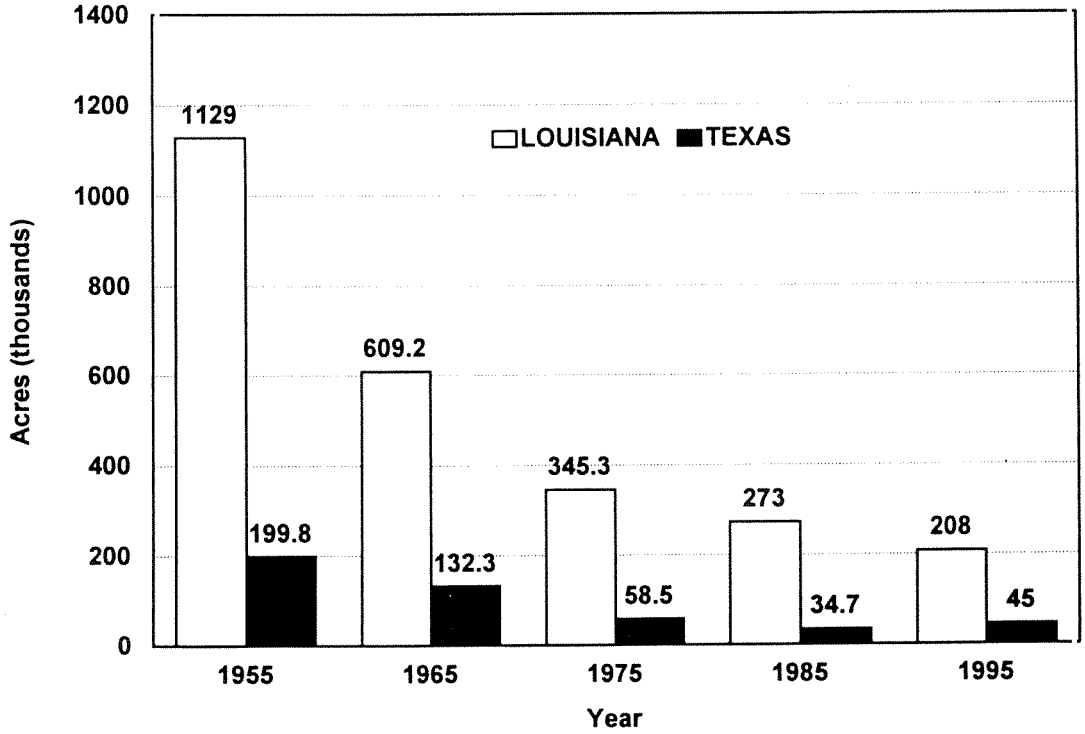

Figure 2. Loss of longleaf pine type in West Gulf Coastal Plain.

1955 to 1985 are adapted from Kelly & Bechtold (1990). Data for 1995 are from surveys that were completed for Louisiana in 1991 (Rosson 1995) and for Texas in 1992 (Miller & Hartsell 1992).

Personnel conducted these inventories on permanent sample plots systematically distributed across timberland to obtain a proportionate sample of all major forest types, sites, and ownership classes in the region. Each sample plot represented a specific number of equivalent acres of timberland from the entire population. This number, termed the expansion factor, had an average value of 3,500 acres for sample plots located in longleaf pine forest type in the West Gulf Coastal Plain. Acreage totals in this report were obtained by summing the expansion factors for all plots where longleaf pine comprised more than 50% of the tree cover. Thus, plots with some longleaf pine, but dominated by hardwoods or other pines, based on total basal area, are not included in this paper.

Data for the 1985 and 1995 survey cycles was collected using the following system. At each sample location, a multi-point cluster plot was used to collect data on a representative sample of trees. Trees 5.0 inches in diameter and larger were selected using a basal-area factor of 37.5 square feet per acre. Trees smaller than 5.0 inches were tallied on small, fixed plots that shared common point centers with each variable

Table 1. Recent changes in longleaf pine acreage in the West Gulf Coastal Plain by ownership and state.

Ownership	Louisiana		Texas	
	1985	1995	1985	1995
		-Acres-		
Public	71,700	73,600	6,100	11,100
Private	103,100	65,600	17,200	11,100
Forest Industry	98,200	68,800	11,400	22,800
Total	273,000	208,000	34,700	45,000

occupied by longleaf over the last decade. However, of the 15 Texas counties in the original range according to Little (1971), only four still have detectable amounts of longleaf forest. Most of the longleaf forest in the West Gulf Coastal Plain is still from natural regeneration, 75% in Louisiana and 73% in Texas. The number of acres of planted stands is increasing, however.

Longleaf forests have remained stable on public lands in the West Gulf Coastal Plain of Louisiana while increasing in Texas over the last decade (Table 1). Forest industry has less longleaf forest in Louisiana now compared to 1985, but in Texas they have increased the amount of longleaf. As is true across the range, there has been a continued loss of longleaf from privately owned lands during the last 10 years in both Louisiana and Texas. The loss on private lands is less of a problem in Texas because private owners only control 25% of the remaining longleaf forest. Forest industry controls 50% of the remaining longleaf area and the other 25% of the longleaf forest is in public ownership. In Louisiana however, the longleaf-containing area is equally divided between forest industry, private and public ownership with each controlling about one third. Most of the current longleaf is larger, sawtimber sized trees in both Louisiana (81%) and Texas (64%) (Table 2). Longleaf reproduction in the seedling and sapling size classes occupies only 13% of the longleaf areas.

DISCUSSION

Of the 74 million acres of pre-colonial longleaf forest (Frost 1993) 4% were in Texas and 6% in Louisiana west of the Mississippi River. Thus the West Gulf Coastal Plain region once contained 10% of all the longleaf habitat. In 1995 Louisiana had 7% of all remaining longleaf type and 4.8% of its original longleaf acreage, but Texas had only 1.5% of its original amount. Therefore, other than Virginia, which has lost

for by plantations, likely resulted from management practices such as selective harvesting or timber stand improvement cuts that favored longleaf and removed hardwoods. Prescribed burning can also favor longleaf pine over other species. Collectively these management practices are resulting in longleaf pine dominating a few more acres.

Loss of longleaf habitat from private lands is a continuing process across the entire natural range. A majority of the remaining longleaf in the West Gulf Coastal Plain is aging second growth of the sawtimber size class. Because of the increasing value of this material there is increasing economic incentive for private individuals to harvest such stands. Availability of pertinent information would allow landowners to make informed choices and could be used to encourage the regeneration back to longleaf following harvest of these stands. The concerns and motivations of these private owners must be addressed if one hopes to maintain the longleaf forest they presently own in the West Gulf Coastal Plain.

LITERATURE CITED

Barnett, J. P., D. K. Lauer & J. C. Brissette. 1990. Regenerating longleaf pine with artificial methods. *In* Farrar, R. M., Jr. ed. Proc. Symp. on management of longleaf pine. April 4-6, 1989, Long Beach, MS. USDA For. Serv. Gen. Tech. Rep. SO-75, Southern For. Exp. Stn., New Orleans, Louisiana, pp. 72-93.

Croker, T. C., Jr. 1987. Longleaf pine: a history of man and a forest. USDA For. Serv. Forestry Rep. R8-FR7, Southern Region, Atlanta, Georgia, 37 pp.

Croker, T. C., Jr. & W. D. Boyer. 1975. Regenerating longleaf pine naturally. USDA For. Serv. Res. Pap. SO-105, Southern For. Exp. Stn., New Orleans, Louisiana, 21 pp.

Cruikshank, J. W., & I. F. Eldredge. 1939. Forest resources of southeast Texas. USDA For. Serv. Misc. Pub. 326, For. Serv., Washington, D.C., 43 pp.

Dennington, R. W., & R. M. Farrar, Jr. 1983. Longleaf pine management. USDA For. Serv. Forestry Rep. R8-FR 3, Southern Region, Atlanta, Georgia, 17 pp.

Eldredge, I. F. 1937. Sawtimber and cordwood volumes in southwest Louisiana. USDA For. Serv. Forest Survey Release No. 23, Southern For. Exp. Stn., New Orleans, Louisiana, 8 pp.

Eldredge, I. F. 1938. Forest resources of northwest Louisiana. USDA For. Serv. Forest Survey Release No. 31, Southern For. Exp. Stn., New Orleans, Louisiana, 21 pp.

Frost, C. C. 1993. Four centuries of changing landscape patterns in the longleaf pine ecosystem. *In* Hermann, S.M. Editor, Proc. 18th Tall Timbers Fire Ecology Conference, May 30 - June 2, 1991, Tallahassee, Florida, Tall Timbers Research Inc., Tallahassee, Florida, pp. 17-44.

Harcombe, P. A., J. S. Glitzenstein, R. G. Knox, S. L. Orzell & E. L. Bridges. 1993. Vegetation of the longleaf pine region of the west Gulf Coastal Plain. *In* Hermann, S.M. Editor, Proc. 18th Tall Timbers Fire Ecology Conference, May 30 - June 2, 1991, Tallahassee, Florida, Tall Timbers Research Inc., Tallahassee, Florida, pp. 83-104.

Hardin, E. D., & D. L. White. 1989. Rare vascular plant taxa associated with wiregrass (*Aristida stricta*) in the Southeastern United States. Natural Areas J., 9(4):234-245.